

A SURVEY OF HYPERTENSION ON AN ISLAND OF KARIMUNJAWA AND PARANG

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Hasil survey ditemukan prevalensi hipertensi 11,2 persen pada laki-laki dan 12,2 persen pada wanita dan keseluruhan 11,8 persen. Perbedaan prevalensi pada laki-laki dan wanita tidak bermakna. Selain itu juga dipelajari pertambahan prevalensi menurut umur. Kecuali sakit kepala bagian occipital yang mempunyai prevalensi tinggi diantara hipertensi, gejala-gejala lain memperlihatkan tidak ada perbedaan antara normo dan hipertensi.

Di kepulauan Karimunjawa dan Parang yang letaknya \pm 150 km sebelah utara Semarang telah diadakan survey mengenai hipertensi pada penduduk yang sebagian besar terdiri dari nelayan dan sebagian lain terdiri dari petani dan pedagang. Bahan penelitian 1229 orang dewasa berumur 20 tahun keatas yang terdiri dari 543 laki-laki dan 686 perempuan. Tujuan survey ialah untuk mempelajari prevalensi hipertensi pada kelompok penduduk yang lokasinya terisolir.

The higher the blood pressure the higher will be the morbidity and mortality (Lancet 1970). Although measurement of the blood pressure is easily done, and adequate treatment will decrease the morbidity and mortality caused by hypertension (Veterans Administration Cooperative Study Group, 1967, 1970), only a small percentage of patients are adequately treated, making control of hypertension less than satisfactory (Miall & Chinn, 1974). This is understandable because high blood pressure often is asymptomatic so that many patients are unaware of their hypertensive status (Waters 1971, Inter Society Commission for Heart Disease Resources 1971, Weiss 1972).

Bearing in mind the "ice-berg" phenomenon of hypertension in the community (Boedhi Darmojo 1976), a more active case finding and if needed early treatment of hypertension to prevent fatal complications should be done rather than to wait the patients in the clinic or outpatient clinic. This kind of community surveys have been done in an urban as well as in rural communities (Boedhi Darmojo et al 1975, Boedhi Darmojo 1976). To study the

community prevalence of hypertension in a somewhat isolated fishermen village, a community survey on the island Karimunjawa in the Java Sea, just in the middle between Java and Kalimantan (Borneo) is reported below.

MATERIALS AND METHODS

The whole adult population (age 20 years or more) of the island Karimunjawa and Parang (the 2 biggest inhabited islands of the Karimunjawa island group), located approximately 150 km north of Semarang was taken as the study population. The inhabitants were mainly fishermen with a small portion working as farmers and merchants. The communication with the mainland Java is only by small sailing ships, a boat-service being very irregular. The health services of the islands is run only by 2 paramedical personnels, a midwife and a nurse. No electricity is available, petroleum lamps are used instead.

The survey was done together with a comprehensive health delivery action program by the Medical Faculty Diponegoro University, the team of which comprised of residents from various departments and medical students. Information and motivation on health aspects accompanied by free of charge mobile out-

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patient clinics were organized while doing this survey. With the help of the prior motivated village-head and other key-persons of the two islands, 1229 individuals were eligible (543 males and 686 females), as the study population that is a coverage of 61 per cent of the whole adult community. These individuals were collected in the village-head office, which had been reorganized as an out-patient clinic, after which a house-to-house visit was done within 5 days, opening the clinic only in the day-time, while the evenings and the nights were used for giving information and discussions with the use of audio-visual aids as well. Prior to the blood pressure measurement a short questionnaire was filled in by the students regarding the patients, complaints which might be associated with the presence of hypertension, a short medical history and family history and their knowledge about hypertension.

As recommended by the WHO (1962), a "casual" blood pressure measurement was done using carefully calibrated mercury sphygmomanometers. The blood pressure determination

was carried out by the residents of Internal Medicine assisted by the 6th year medical students. Prior to this a training for blood pressure measurement has been organized so as to reduce as far as possible intra-and-inter-observer's errors. After collecting the data the Chi-square test has been applied for statistical analysis.

RESULTS

Within 5 days 1229 people could be examined, consisting of 543 males and 686 females, being a coverage of 61 per cent. The distribution

Table 1 Mean blood pressure according to age (Mean \pm 1 SD).

Age groups (years)	Systolic	Diastolic
20 - 29	126.88 \pm 20.69	78.75 \pm 9.57
30 - 39	123.37 \pm 18.61	82.69 \pm 10.74
40 - 49	131.28 \pm 19.43	81.18 \pm 11.01
50 - 59	138.63 \pm 22.31	81.24 \pm 10.70
\geq 60	142.54 \pm 24.54	79.94 \pm 10.91

Table 2 Mean blood pressure according to age and sex.

Age groups (years)	Male		Female	
	Syst. / diast.		Syst. / diast.	
20 - 29	127.07 \pm 15.57	/ 78.38 \pm 10.66	126.80 \pm 14.89	/ 78.91 \pm 9.11
30 - 39	116.86 \pm 19.03	/ 85.30 \pm 11.55	128.83 \pm 16.25	/ 80.51 \pm 9.45
40 - 49	127.32 \pm 18.76	/ 80.33 \pm 10.34	135.45 \pm 19.28	/ 82.20 \pm 12.10
50 - 59	134.09 \pm 22.64	/ 80.31 \pm 11.63	143.87 \pm 20.79	/ 82.31 \pm 9.45
\geq - 60	135.50 \pm 21.73	/ 79.36 \pm 12.71	148.14 \pm 24.62	/ 80.41 \pm 8.79

Table 3 Prevalence of hypertension according to age

Age groups (years)	Male			Female			Total	
	No.	Hyp	percent	No.	Nyp	percent	percent	percent
20 - 29	104	7	6.73	222	16	7.21		7.06
30 - 39	174	19	10.92	208	16	6.25		8.38
40 - 49	156	15	9.62	148	25	16.89		13.16
50 - 59	74	15	20.27	64	15	23.44		21.74
\geq 60	35	5	14.29	44	16	36.36		26.58
Total	543	61	11.23	686	84	12.24		11.80

of the mean blood pressures (mean \pm 1 SD) according to age is shown in table 1. The distribution of mean blood pressure by age and sex can be seen in table 2.

Using the above mentioned criteria (BP), 160/95, systolic and/or diastolic) 145 people (11.8 percent) can be regarded as hypertensives,

comprising of 61 men (11.2 per cent) and 84 women (12.2 per cent). Table 3 shows the prevalence of hypertension according to age. Further distribution of the hypertensives according to the height of the diastolic blood pressure is seen in the table 4.

Table 4 Hypertension according to diastolic pressure.

Diast. BP (mmHg)	Male		Female		Total	
	No	percent	No	percent	No	percent
≥ 94	13	21.31	29	34.52	42	28.96
95 – 99	30	49.18	24	28.57	54	37.24
100 – 104	11	18.03	13	15.48	24	16.55
105 – 109	1	1.64	6	7.14	7	4.84
110 – 114	3	4.92	9	10.72	12	8.27
115 – 119	1	1.64	—	—	1	0.69
120 – 124	2	3.28	—	—	2	1.38
125 – 129	—	—	1	1.19	1	0.69
130 – 134	—	—	1	1.19	1	0.69
≥ 135	—	—	—	1.19	1	0.69
	61	100	84	100	145	100

Table 5 Comparison of complaints between normo and hypertensives.

Complaints		Normotensives		Hypertension		χ^2
		No	percent	No	percent	
Black	yes	781	72.05	103	71.03	0.063
	No	303	27.95	42	28.97	
Vertigo	yes	664	61.25	101	69.66	3.839
	No	420	38.75	44	31.34	
Occipital headache	yes	579	53.41	93	64.14	5.934 *)
	No	505	46.59	52	35.86	
Easy tiredness	yes	612	56.46	90	62.07	1.641
	No	472	43.54	55	37.93	
Headache	yes	611	56.37	84	57.93	0.126
	No	473	43.63	61	42.07	
Tinnitus aurium	yes	557	51.38	76	52.41	0.053
	No	527	48.62	69	47.59	
Insomnia	yes	403	37.18	63	43.45	2.137
	No	681	62.72	82	56.55	
Irritability	yes	353	32.56	35	24.14	4.200
	No	731	67.44	110	75.86	
Migraine	yes	190	17.53	31	21.38	1.286
	No	894	82.47	114	78.62	
Epistaxis	yes	56	5.17	5	3.45	0.795
	No	1028	94.83	140	96.56	

Note : for df = 1 χ^2 tabel =

0.05	0.01
3.841	6.635

 *) $p < 0.05$

Among complaints which might accompany hypertension, only occipital headache (sense of stiffness) was statistically significant ($p < 0.05$) more among the hypertensives, whereas irritability occurred just more in the normotensive group. All the other complaints did not differ statistically. (table 5). Awareness of hypertensive status was reported by only 6.9 per cent among the hypertensive, and only 2.9 per cent are regularly treated. None of these regular treated individuals had their high blood pressure controlled.

DISCUSSION

Within 5 days of hard work only 61 per cent coverage could be covered. This was partly due to the difficulties faced in the field with people living scattered over the 2 islands, many of them living in areas that were difficult to reach. Seeing the amount of eligible persons for examination, it was understandable that more women than men could be examined, the men being fishermen and merchants, were more likely to have their activities outside their village (fishing and at the same time selling fish to the mainland). With this in mind the prevalence of hypertension among them could have been lower.

As in other surveys on hypertension a rise of mean systolic blood pressure with increasing age could be observed. The diastolic blood pressure however, remained constant. An increasing tendency of the 1 SD values in systolic blood pressure were observed as well, again accompanied by relatively constant figures of the diastolic pressures.

In this study, the prevalence of hypertension (11.8 per cent) was higher than figures from previous surveys Boedhi Darmojo (1972), Albernathy (1974) has found a prevalence of 9.0 per cent in a rural population in Australia. Hawthorne et al (1971) have found a higher mean blood pressure on the island Tiree (100 miles north west from Glasgow) than on the mainland.

A rough observation among the salt consumption of these population, which was practically the same as people living at the main land,

did not support this explanation. The drinking water of most of the people of Karimunjawa came from a well, just in the middle of the island and they ate practically no salted fish since there was always fresh fish in abundance. Anyhow the salt consumption of these individuals will be thoroughly investigated in the next study.

There were also 2 women with diastolic blood pressure 130 mmHg (table 4). Unfortunately an investigation whether this was of renal origin or not could not be done yet. Whether urine infection, which could be regarded as more apt to occur among women could be the cause of this higher prevalence remained to be speculated but not proved. Prior (1973) among Polynesians and Manelis and Shasha (1973) among the Druses in Israel, have found also higher prevalence among women.

With the use of Freis criteria (1974), 82.8 per cent of the hypertensive cases belonged to the mild hypertension (diastolic BP = 95 – 105 mmHg). This fact confirmed other reports (McCall et al 1973, Hawthorne et al 1973, WHO 1972, Boedhi-Darmojo 1976) (table 4). According to various authors (Miall & Chinn 1974, Doyle 1976) those patients need not be treated but must be followed-up closely. The same thing applied for the borderline cases (BP ranging 140 – 160 / 90 – 94 mmHg).

Comparing the complaints in normo-and-hypertensive subject the conclusion was that only occipital headache was the only one which was significant, occurring more among the hypertensives. ($p < 0.05$). Waters (1971) found no significant correlation between headache and high blood pressure and Weiss (1972) have found the same nonsignificant results regarding headache, epistaxis, tinnitus, dizziness and fainting. However, among city dwellers with hypertension significantly more complaints such as occipital headache, easy tiredness, irritability, and insomnia were found. (Boedhi-Darmojo et al 1976), in comparison with the normotensive population.

Comparing the results of prevalence of hypertension, awareness of hypertension, treated cases and regularly treated cases, with other population groups, the impression got is that in

spite of their somewhat isolated situation the percentage of awareness of hypertension was higher than the other rural population, although the controlled cases was equally zero. After this survey the hypertensive cases were referred to the care of the available medical personnel on the island, in order to be followed-up.

SUMMARY

To make a study of a somewhat isolated community, a survey of hypertension among individuals 20 years and older, living on a island in the middle between Java and Borneo, was done. Using procedures as recommended by the WHO (1962), a coverage of 61 per cent of the whole adult population could be reached. As expected the males were more difficult to reach than the females. This was due to their activity outside their homes as fishermen and merchants. A prevalence of hypertension of 11.8 per cent was found (11.2 per cent) among

men and 12.2 per cent among women), the difference in males and in females, being statistically non-significant. A tendency of increasing prevalence of hypertension and mean blood pressure with age, was observed. Excepting occipital headache, which was more prevalent among the hypertensives ($p < 0,05$), the other symptoms showed no difference between the normo- and the hypertensives.

Constraints in case finding and controlling the hypertensives were among others, shortage of medical facilities, transportation, logistical difficulties, financial barriers, lack of knowledge, ignorance and neglect.

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